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SELECT COMMITTEE ON
SCIENCE AND TECHNOLOGY

**NON-FOOD CROPS
GOVERNMENT RESPONSE**

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FOURTH REPORT

4 APRIL 2000

By the Select Committee appointed to consider Science and Technology.

ORDERED TO REPORT

NON-FOOD CROPS GOVERNMENT RESPONSE

In November 1999 we reported on *Non-Food Crops* (1st Report 1999-2000, HL Paper 5). We observed that, besides being a form of diversification for farmers, non-food crops offer a wealth of opportunities for novel and sustainable inputs to a range of industries. We recommended an interdepartmental committee, chaired by the Minister for Science, to co-ordinate Government thinking on the possible contribution of non-food crops to policy objectives, and to broaden the focus of attention from agricultural supply to industrial opportunity and demand.

The Government have responded, and their response is appended to this Report. They have agreed to set up a joint forum, involving Government, industry and researchers, to review developments and advise on priorities. We welcome this, but we do not think it is incompatible with, or a substitute for, the appointment of a ministerial "champion".

The Government intend the Ministry of Agriculture, Fisheries and Food to take the lead in convening this joint initiative, rather than the Minister for Science. This suggests to us that the main message of our Report, that non-food crops present important opportunities requiring a transdepartmental approach to policy, has not really been taken on board. We note that the response itself is the product of discussion between no fewer than six Whitehall departments, plus the devolved administrations: as Lady Hogg, who chaired our inquiry, put it when the House debated our Report on 3rd March, "Such lists are always an illustration of the need for central drive". The forum is however a step in the right direction and we wish it well.

APPENDIX 1

NON-FOOD CROPS—GOVERNMENT RESPONSE

1. The Government welcomes this report from the House of Lords Select Committee, and the opportunity it presents to review the position on non-food crops.
2. The Government believes firmly that non-food crops have an important contribution to make towards sustainable development through substitution for products made from petroleum or other mineral sources, and by direct synthesis of chemical compounds which can otherwise only be produced by laborious processes. They can provide important new sources of raw material for industrial sectors such as chemicals, pharmaceuticals, construction and energy. And they can help farmers to diversify into profitable new markets and contribute to rural development and employment.
3. The Committee has rightly emphasised the importance of non-food crops other than energy crops, where the Government has recently announced plans to provide substantial support. The Government accepts that these other crops also need encouragement in suitable ways, and it will look positively at the Committee's various recommendations, subject of course to the availability of resources. The report's central messages: that activity should be better co-ordinated in the UK and in Europe; that research should play an important role; and that activity should be geared to industrial potential, are ones which the Government is happy to endorse.
4. The following detailed response to the Committee's recommendations has been put together in discussion between MAFF, DTI, OST, DETR, Home Office, DH and the devolved administrations. References are to the paragraphs in the Committee's report.

7.10 We recommend that responsibility for assessing and exploiting the potential of non-food crops, and in particular their potential to form the basis for new innovative industries, be co-ordinated by an inter-departmental committee led by the Office of Science and Technology (OST).

5. The Government agrees that further co-ordination of non-food crops activity is needed and that this would benefit both the non-food sector of agriculture and various branches of industry, particularly the chemicals sector.
6. There are a number of reasons why this is timely. The current collaborative research programme into Competitive Industrial Materials from Non-Food Crops (CIM LINK) expires in 2001, and thought needs to be given to future arrangements. The Alternative Crops Technology Interaction Network (ACTIN) is reviewing its future and its relations with its European counterpart IENICA. The Food Chain and Crops for Industry Foresight panel is due to report in November. These activities already bring together Government and industry.
7. A number of Departments are involved with non-food crops, but given their industrial significance the Government believes that co-ordination in Government alone is not enough. Rather, it would be more effective to set up a joint mechanism with the relevant industry sectors and the scientific community. The Government therefore proposes to consult interested parties on the establishment of a joint forum, whose role would be to keep under review the development of non-food crops, to look ahead for potential opportunities, to advise on priorities for research, and to advise on ways in which Government policy can help.
8. The development of these crops must be led by the market, and industry has prime responsibility for assessing and exploiting their potential. Industry is already active through the ground-breaking internet database operated by ACTIN, the CIM LINK programme and the Food Chain and Crops for Industry Foresight panel task force entitled 'Unlocking the potential of industrial crops'. This task force is taking a strategic look at the factors that may provide business opportunities to companies operating in the industrial crops sector, or who may move into it. It will also look at the barriers that exist now and may arise in the future to the pull-through of basic science and technology into successful applications. The proposed forum would provide a mechanism for strategic discussion of this whole area, and for the conclusions of the Foresight Panel to be taken forward.

7.11 This Committee should be headed by the Minister for Science as an identifiable "champion". The Minister and the committee should publish a report annually on its progress.

9. The Government believes that the joint industry/Government forum, described above, would be the most appropriate way to take this forward, and that it should be led by a senior industrialist from one of the DTI user sectors. It would publish an annual report on the state of development of non-food crops. The success of non-food crops in meeting industry's needs is dependent on agriculture for a consistent supply (quality, quantity, price) of crop-derived raw material, and agriculture policy is crucial in achieving this. For this reason, the Government's view is that MAFF should take the lead in

convening the joint initiative. Other departments - including DTI, OST and DETR - with an interest in developing and promoting the use of non-food crops by industry and in sustainable development will have a key role to play in ensuring the success of this initiative.

7.14 We recommend that the United Kingdom Government should make representations to the European Commission to establish a coherent European policy, with emphasis on the support of a co-ordinated research programme, in the context of the 6th Framework Programme which is now under discussion. The programme should address not only new crops but also the crop handling and processing necessary for future industries.

10. We agree that co-ordination between the various Directorates General in the European Commission could be improved. There are various examples where this has been lacking such as the EU White Paper on Renewable Energy, which set targets for a significant expansion in biomass production but which received no practical support from the DG Agriculture. It is disappointing that the Common Agriculture Policy seems so unable to take account of new issues such as the development of crops as industrial feedstocks. The Government has been making this point clearly in Brussels in the context of the current reform of the flax and hemp regime, where the Commission's proposals, although a useful step towards reform, would discriminate against production of flax and hemp for new industrial uses.

11. The current Framework Programme (FP5) includes the possibility of action on novel crops and crops for non-food uses and could include research on crop handling and processing to which the Committee refers. The Government is keen to encourage research in these areas but the number and quality of proposals has not been particularly high. The Commission and Member States are considering how to generate more interest.

12. For the future, the structure, organisation and science content of FP6 are being discussed with the Commission. The Government considers that EU research programmes should be driven by the needs of Community policies and R&D funds concentrated on areas which require co-operation at EU level. Policy makers should be involved in the formulation of programme objectives. Non-food crops, their handling and processing, is an area where more work is needed, and the Government is pressing for this to be recognised.

7.15 We recommend that this database (IENICA) be maintained and extended to include greater technical detail to assist decision-making by growers and manufacturers.

13. This is a valuable recommendation which the Government supports. IENICA (the Interactive European Network on Industrial Crops and their Applications) is an EU initiative funded by DG Research. The IENICA database was developed at the MAFF Central Science Laboratory in York and its wide geographic base facilitates targeted EU seminars on non-food crops. The Government supports the need for such exchanges of information and for easy access to quality data.

14. There is scope for the technical content of IENICA to be extended. For example, it would be possible to include data on specifications for crop-derived raw materials and market specifications for products.

15. However, IENICA is funded by the EU and its future development is a matter for the European Commission. CSL is well placed to lead future development and is bidding for funds for this.

7.16 We recommend that detailed consideration should be given to subsuming the ACTIN database into IENICA.

16. ACTIN seeks to encourage links between industry, Government and the research community in the development of renewable raw materials from crops. It has received substantial pump-priming assistance from the Government in its first few years of existence. IENICA is a gateway database for Europe with links to other relevant databases. It holds information on plants, markets, opportunities and constraints. Both initiatives maintain internet databases. ACTIN's is more detailed, but the information is largely confined to UK interests. Much of the information is available only to subscribers. IENICA has a broader range of information from many Member States, though this is less detailed and less technically developed. It is available free of charge.

17. Since the two databases share complementary objectives, bringing the two together is an interesting idea. It would certainly be helpful to put in place suitable links, so that users could easily move between them. However, it is difficult to envisage ACTIN being wholly subsumed within IENICA, because of concerns that UK industry would lose competitive advantage because of the need to share details of project and other activities. This said, with the withdrawal of Government pump-priming funding ACTIN must operate on a commercial basis and it is for ACTIN and its industry sponsors to decide on its own future.

7.18 We strongly support the case for research into applications of biotechnology, to enable the potential for new pharmaceutical and other products to be developed from plants to be evaluated.

18. The Government agrees that transgenic technology has much to offer in the development of novel therapeutic and prophylactic medicinal products from plants. This development presents potential opportunities for applying the technology to the protection and the improvement of human health. This technology has been actively pursued by certain sectors of the industry, as a commercially attractive alternative to the conventional process based on cell culture, in view of the higher production yields obtainable.

19. As with other pharmaceuticals, products derived from plants will be subject to rigorous regulatory scrutiny to ensure that they meet the objective criteria for safety, quality and efficacy. The Government's priority with biotechnological developments is to protect public health and the environment. The CIM LINK programme already provides a collaborative mechanism to support research into areas like this. When arrangements are discussed for its successor, the importance of supporting high value, low volume products will be considered.

7.19 We recommend that the DTI evaluate the industrial potential of these nascent technologies, and that they be assessed on the basis of their contribution to a new biotechnology industry rather than focusing purely on ways to increase farm diversification.

20. Given initiatives currently underway within DTI and OST, the Government does not believe that there is a case for new work from DTI at this stage. The joint Government-industry forum proposed above would look at this issue in the light of the opportunities and barriers identified by the Foresight task force, Unlocking the potential of industrial crops, and by work underway under other Foresight Panels - on Chemicals and Materials - that also touch on non-food crops.

21. Non-food crops are not seen primarily as a way to increase farm diversification, though this is a useful benefit from them. Although it is true that interest in such crops was boosted by the introduction of set-aside, farmers are well aware of the need to grow for the market and this is now the principal driver for their production.

7.20 We recommend that DTI-funded research and development is increased so that the United Kingdom will be early to market with novel industrial products from plants.

22. DTI recognises the industrial importance of many non-food crops and already devotes significant effort to promoting the competitiveness of the industries concerned, *inter alia* through targeted programmes of research. Relevant sectors include textiles, clothing and footwear and paper, cotton and rubber. DTI co-sponsors the CIM LINK programme, and is a sponsor of ACTIN.

23. While it is not possible to devote the same level of resource to every sector, the Department is keen to work closely on competitiveness with all the sectors for which it has sponsorship responsibility. However, the case for supporting new R&D must be judged against other priorities.

24. Other Departments have programmes of underpinning research and development which aim to develop the potential of non-food crops. Expenditure by MAFF and the Scottish Executive totals around £1.8m per annum. Government funding for the CIM LINK programme amounts to £4m over 5 years.

25. MAFF is contributing £2.1m to the establishment of the Centre for Novel Agricultural Products (CNAP), a new research centre at the Biology Department of the University of York. CNAP aims to utilise knowledge of plant biology, particularly in the area of functional genomics and protein science, in the development of renewable industrial resources from plants. The research studies plant genes and the links between genes, the proteins they produce and secondary metabolites. The aim is to provide underpinning information for research into the use of plants as 'cell factories'. These could be important for a substantial range of non-food purposes including new chemicals and pharmaceuticals and natural and modified products with new uses.

7.21 We urge the Government to use the intervening period to put in place the necessary United Kingdom research programmes to resolve the uncertainty over policy implementation and to prepare for the phased introduction of new technologies and the development of new industries.

26. The Committee is referring to uncertainties about the future of agricultural policy. The Government's long term policy towards agriculture is to secure a more competitive and sustainable industry with a stronger market orientation. This was our philosophy in pressing for a radical reform of the Common Agricultural Policy during the Agenda 2000 negotiations. The outcome represents an important step in the right direction for the CAP: a shift from price support to direct payments, which will reduce the economic distortions of the Common Agricultural Policy; and an integrated EU rural

development policy which provides the basis for a switch of emphasis from production-related support towards targeted environmental and rural economy measures. We will pursue opportunities to push for completion of the reform process started at Berlin to be completed for other commodities. If there is meaningful reform this should give a sound basis for the introduction and development of new technologies and industries.

27. On research and development, the Government has already committed funding to the CIM LINK programme. This comes to an end in mid-2001 and we are giving thought to an updated programme of activity in the future. This is in addition to other work funded by MAFF and the Scottish Executive (see the response to paragraph 7.20). An enhanced programme of R&D on crop protection and environmental monitoring is also being planned in parallel with the new support for establishment of energy crops.

7.22 We recommend that the Government put in place as a matter of urgency more clearly defined policies to meet their environmental targets, particularly with respect to sustainability issues and the use of renewables. In doing so, they should recognise the possible contribution of non-food crops.

28. Since coming to office the Government has done a great deal to develop environmental targets in consultation with interested parties. This is an ongoing process, which includes many Departments' initiatives:

- In May 1999 DETR published the White Paper, *A Better Quality of Life: a strategy for Sustainable Development in the UK*. This included a revised set of sustainable development indicators.
- MAFF is publishing sustainable agriculture indicators, which include non-food crops, in February.
- DETR is responsible for developing and co-ordinating the Draft Climate Change Programme for the UK which will set out how climate change targets and objectives are intended to be achieved.
- DTI has published on 1 February 2000 *Conclusions in Response to the Public Consultation on New and Renewable Energy*, in which it proposes that 5% of UK electricity requirements should be met from renewable resources by the end of 2003 and 10% by 2010, subject to affordability. It recognises that energy crops have a role to play in meeting these targets.
- HM Customs and Excise has consulted on how the Climate Change Levy Fund might be used to support renewables, including energy crops.

29. Non-food crops have a contribution to make in these various policy areas. But the Government accepts there is potential to raise the profile of non-food crops further and to ensure that relevant Government policy is co-ordinated to best effect. The joint Government/industry forum proposed in response to recommendation 7.10 will provide a mechanism for achieving this.

7.23 We recommend that future proposed short rotation coppice demonstration projects for energy generation be assessed for priority by the proposed inter-departmental committee alongside alternative options for the financial support of innovative non-food crops.

30. The Minister of Agriculture, Fisheries and Food has recently announced that he plans to spend £29m to support the development of energy crops in England under the Rural Development Regulation. The DTI Conclusions in Response to the Public Consultation on New and Renewable Energy indicate that supplementary support to the generation of electricity from energy crops and offshore wind is also being considered. Expenditure in these fields will be evaluated in due course.

31. Energy crops and the other crop-derived renewable raw materials are complementary but separate industries. The needs of the sectors and the possible mechanisms for supporting them are different. The Government accepts that innovation should be encouraged for other non-food crops, and will take the advice of the proposed new forum on the priorities which should be attached to this. The resources which can be devoted by the Government will depend on the strength of the case made for these crops.

7.24 We recommend that the Government support further research, using technologies such as Life-Cycle Assessment, to assess the value of non-food crops in meeting their policy objectives. These assessments, with all the assumptions on which they rely, should be published.

32. The Government agrees that it would be helpful to have better tools for assessing the benefits of non-food crops and their value in meeting policy objectives. Such tools could include assessment of environmental benefits through life-cycle analysis.

33. MAFF has in fact funded work to establish principles for Life-Cycle Analysis for non-food crops and it is intended to take this forward through published work and at a targeted seminar. Life-cycle analysis can be expensive but the Government will use such tools where appropriate.

34. Government policy is to make research and development reports publicly available.

7.25 We urge the Government to raise the benefits of bio-degradable packaging in its hierarchy of objectives, and to recast the regulatory regime to encourage its use.

35. Much packaging waste is already bio-degradable, being based on paper and card.

36. We encourage producers to take the whole life costs of their products into account wherever possible, and this may affect the choice of materials used. Products which are designed to be easily reusable and recyclable will often be preferable to products designed specifically for disposal. This basic principle of the waste hierarchy reflects two major objectives: encouraging the more efficient use of resources, and reducing the environmental impact of waste management.

37. One of the environmental impacts of disposing of bio-degradable matter to landfill is the production of methane, one of the principal greenhouse gases. This is one of the drivers behind the EU Landfill Directive, which sets challenging targets for the diversion of biodegradable municipal waste from landfill.

38. The role of bio-degradable packaging is a further issue, which the industry/Government forum proposed in response to recommendation 7.10 will no doubt wish to consider.

7.27 We recommend that the growing of industrial hemp should be deregulated.

39. UN drugs legislation requires active control of industrial hemp production, hence the need for the licensing system operated by the Home Office. There is evidence that other Member States implement UN requirements in a less rigorous way and we understand that the UN's International Narcotics Control Board is likely to raise this with the European Commission.

40. Meanwhile, the Commission has proposed reform of the CAP regime for flax and hemp, including new controls on the growing of industrial hemp and on the import of hemp seed. Amongst other things this would require Member States to implement prior approval of hemp growing, as the UK already does. Whilst the Government is broadly in favour of reform of this regime, we question whether all the new controls on hemp proposed by the Commission are needed, and have drawn this recommendation in the Committee's report to their attention.

Ministry of Agriculture, Fisheries and Food

February 2000

APPENDIX 2

MEMBERS OF THE SELECT COMMITTEE

Lord Flowers (co-opted)
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